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TRANSLATIONS ON ENVIRONMENTAL QUALITY

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REGULATIONS ON DISCHARGE OF RUBBER, PALM OIL EFFLUENT

Kuala Lumpur BUSINESS TIMES in English 27 Apr 78 p 4

[Text]

THE regulations regarding control over the discharge of effluents for block rubber and conventional grade rubber factories will be gazetted this year, the Dewan Negara was told yesterday.

Minister of Science, Technology and Environment Tan Sri Ong Kee Hui said the regulations, to be known as the Environmental Quality (unprocessed rubber) Regulations, would be enforced early next year.

Replying to Senator M. Mahalingam during question time, he said the regulations for coagulated latex factories would be gazetted in July next year.

With the implementation of these regulations, the volume of pollution from factories could be reduced by more than 80 per cent, he said.

On the regulations for the discharge of effluents from palm oil mills, Tan Sri Ong said these had been gazetted on Nov. 3 last year.

Under these regulations, all palm oil mills were required to obtain

discharge of effluents licences making it compulsory for them to reduce their load of effluents progressively from July 1 this year.

Tan Sri Ong said the environment division in his Ministry had so far processed applications for the licences from 130 palm oil mills and 50 more from proposed mills.

It was estimated that with the enforcement of effluent standards and various conditions under the regulations, the volume of pollution by the mills could be lessened by between 70 and 75 per cent.

Tan Sri Ong said another set of regulations — the Environment Industrial (sludge and effluents) Regulations — was being studied and was expected to be ready for gazetting this year.

Under the regulations, new factories would be required to satisfy the conditions with immediate effect while existing factories would be given a year's grace to do so. — Bernama.

## TROPICAL RAIN FORESTS IN DANGER OF RUIN

Kuala Lumpur BUSINESS TIMES in English 17 Apr 78 p 1

[Text]

**SOUTHEAST** Asia's tropical rain forests, once the region's greatest source of natural wealth, are fast retreating under the scourge of ill-planned exploitation. And if the rape of the forests goes unchecked, timber resources will be completely exhausted by the end of the century, a recent U.N. report says.

In Thailand, 2,500 square kilometers of woodland are bared annually by soil erosion, building and settlement. According to official estimates, Thai forests will be completely denuded in 25 years. The National Forestry Department predicts Thailand will be importing timber for local consumption after 1985.

In the Philippines and Malaysia, studies made in 1974 by the U.N. Economic and Social Commission for Asia and the Pacific predicted all accessible lowland forests

would be flattened in 10 years.

"Tropical forests are in sharp retreat everywhere," says a United Nations Environment Programme (UNEP) report, "but nowhere with the same alacrity as in Southeast Asia where population pressure is greatest."

The report, first to be compiled by the UNEP regional office for Asia and the Pacific inaugurated in 1975 and headquartered in Bangkok, was made available Friday. It claims five to seven million of arable land worldwide are lost annually representing a cost to agriculture of hectares US\$10 billion.

"As the population of the world increases beyond the four-billion mark and economic expectations rise," the report says, "more and more of the life-supporting systems on earth

are subject to overuse, regardless of long-term ecological and economic advisability. Ill-planned and badly-managed exploitation has led to increasing degradation of ecological systems, reducing many to unproductive states."

The report points out that even fragile crusted mountains and islands have not been spared. Deforestation abuse has resulted in soil loss and sterility, and mountain losses have affected life and economy millions of miles away.

"Aerial photographs," the report says "have revealed a huge island 50,000 square miles — 128,000 square kilometers — in area is being formed in the Bay of Bengal, from soil washed down from the Himalayas and other watersheds."

The report lists monoxides, carbon and sulphur dioxides, risky ma-

**BANGKOK, April 16** nagement of radioactive nuclear wastes — and heavy dependence by rural populations on firewood, causing rapid deforestation, soil erosion and hydrological changes — as hazardous by-products of current energy development and consumption practices in Southeast Asia.

While advising governments on dealing with such pollutants and planning development on a sound environmental basis, the UNEP stresses educating future generations.

China, Bangladesh, Singapore, Iran, Australia, Japan, India and Thailand are among countries in the region which have consolidated environment education in schools and universities. In addition, environment training courses are offered in two international institutions in the region. — AP.



QUEBEC TO CHANGE POLICY ON COMBATING STREAM POLLUTION

Montreal LA PRESSE in French 16 May 78 p D 4

[Article by Jean-Pierre Bonhomme: "Purification of Streams: Quebec Intends to Attack Five Specific Regions"]

[Text] The government of Quebec is going to make a radical change in its policy regarding purification of streams. Instead of continuing total sanitation programs which, at great expense, consider only the municipal aspect of the treatments, the government is going to act in a more integrated and specific manner in areas which have the most impact on the quality of the waters of the Saint Lawrence.

Yesterday, the minister explained that the decision to correct the situation was made following conclusion of an agreement with the federal government, an agreement awarding \$107 million to Quebec for sanitation (an additional \$133 million were awarded for construction of the south bank interceptor of the river of the Prairies).

Instead of opting for a policy of "chromed plants for purification of waste water (municipal) which is very expensive and yields little return," said Mr Leger, the government is going to turn its attention to all types of polluting agents, including the municipal system, within the five regions located upstream from Montreal.

The minister hopes to reduce by 50 percent the pollution in the river itself while protecting the five upstream areas which constitute the largest nesting, spawning and breeding areas in the territory. These areas are as follows: Lac Saint-Louis, Deux-Montagnes, Des Prairies, Mille-Iles and Candiac.

Information

In these localities, government officials will be called upon to set up information programs which will try to convince the municipal officials and the general population of the necessity for undertaking immediate anti-pollution studies. Substantial subsidies will be granted to public organizations, although the type of subsidy is as yet undecided.

Therefore, civic action groups will be solicited for help in rehabilitating 31 beaches, 38 seaside areas, 13 campgrounds and for releasing 20 waterways and 114 ecological sites. Mr Leger explained that the alternative is to construct within twenty years a complete network of municipal purification plants at the exorbitant cost of \$3 billion. "The net result of this policy," he continued, "will be to allow municipalities to return purified water to polluted streams. This is like adding clean water to dirty dish water. The water is improved, but it cannot be used again."

The CUM

Finally, the minister announced that the SPE [expansion unknown] will attack certain specific sectors at the source, where the effect of the waste is multiplied by including not only municipal sewage, but industrial sewage as well. The minister did not announce what policy the government of Quebec will adopt regarding construction of the filtration plant of the Urban Community of Montreal, a gigantic project which will require expenditures on the order of a half-billion dollars.

With the intention of determining the principal targets for immediate action, the minister announced formation of a "joint study group." This new organization "will identify the targets where rapid intervention will allow us to resume use of our streams."

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## BULGARIA

### 1977 GENEVA ENVIRONMENTAL CONVENTION RATIFIED

AU251759Y Sofia BTA in English 1442 GMT 25 May 78 AU

[Text] Sofia, May 25 (BTA)--Bulgaria ratified today the convention on prohibition of military or any other hostile use of environmental modification techniques signed by her in Geneva on May 18, 1977.

Mr Todor Zhivkov, first secretary of the CC of the BCP and president of the State Council of Bulgaria, signed on behalf of the State Council a decree and a document on ratification of the convention.

He underlined that its signing is a new concrete step aimed at the limitation of the imperialist-imposed arms race. "This race which for many years has been poisoning the international life, threatens the world permanently with a thermo-nuclear catastrophe and swallows colossal means and human efforts of the top-qualified brains and labour of the nations", said Mr Zhivkov.

Mr Todor Zhivkov pointed out that the convention closes the doors on proliferation of the armaments race in the sphere of the so-called "meteorological" or "geophysical warfare". "The successful agreement in such a complex sphere confirms the thesis that it is much easier to act beforehand, previous of these weapons entering the war arsenal of the states. This fact points out the correct way for settling other issues connected with the development of new mass extermination weapons and first of all pertaining to mutual prohibition of the barbarous neutron weapons", underlined the Bulgarian head of state.

According to Mr Zhivkov the new convention proves that where there is goodwill agreement could be achieved on the most complex and delicate issues from the sphere of disarmament. "And such positive result is possible only by strict observance of the principles of disarmament and especially of the major principle of non-violation of the interests of any participating country in the negotiations, i.e. when none of the participating sides strives for unilateral advantages", added Mr Zhivkov.

He also noted that the ratification of the convention is a concrete and eloquent proof of the principled and peaceful foreign policy of the BCP and the Bulgarian Government.

The Bulgarian party and state leader stressed that at the 10th special session of the UN General Assembly, Bulgaria, in close cooperation and interaction with the fraternal socialist countries and, first of all, with the CSSR, comes out with concrete and realistic proposals on all basic problems of curbing the arms race and for real disarmament.

Before the signing ceremony Mr Petur Mladenov, member of the Politburo of the CC of the BCP and minister of foreign affairs of Bulgaria, proposed on behalf of the Ministerial Council to ratify the document.

Mr Petur Tanchev, chairman of the Standing Committee for Foreign Affairs with the National Assembly, secretary of the Bulgarian Agrarian Union and first vice-president of the State Council, on behalf of the committee supported the proposal of the Ministerial Council.

## EAST GERMANY

### WATER PURIFICATION PROJECTS DESCRIBED

East Berlin BAUERN-ECHO in German 13/14 May 78 p 8

[ Article by Dr Wolfgang Regler, Ministry for Environmental Protection and Water Management: "Rejuvenating Cures for Our Lakes and Ponds"]

]Text] At present there are about 13,200 lakes and ponds in the GDR. Many have come into being just in the last few years, for example in the residual pits of depleted strip mines. Bodies of so-called standing water comprise a total area of 140,000 hectares. They have great significances as reservoirs in addition to dams.

Natural silting of lakes and ponds has increased in the past few years because of progressive intensification of industrial and agricultural production. Plant nutrients are getting into the water in increased quantities; this causes algae, other micro-organisms and higher water plants to multiply in large numbers. Obtaining drinking water and water for industrial use is hampered by this and it becomes economically more and more costly because of additional essential water-processing methods. The recreational value of the waters and their usefulness for inland fishing are likewise affected.

#### Silting Takes Place

Eutrophication has an effect especially in shallow lakes and ponds up to 20 meters deep. Moreover, the depth of the water, which is steadily reduced by sludge deposits, or the closing off of lakes and ponds as a result of silting, serve to reduce useable water resources.

In order to counteract this development, the Ministry for Environmental Protection and Water Management on the basis of a resolution by the Council of Ministers developed a long-term program for cleaning up bodies of standing water. This specifies measures to help gradually reduce silting and reed overgrowth and to help prevent to a considerable degree any additional closure.

At present there are about 3,000 lakes and ponds in our republic which need to be cleaned up. In the period 1972-76 there were 530 such bodies of water with an area of 4,700 hectares which were subjected to "a rejuvenation cure" and were freed of mud. In the current 5-year plan period there is provision for cleaning up about 200 lakes and ponds having an area of about 6,000 hectares--especially in Rostock, Potsdam and Halle Bezirks. The quantities of mud to be dredged are estimated at about 20 million cubic meters.

What methods can be used for cleaning? The most important is desludging. Devices used for soil improvement are employed, for example the suction dredge, the chain-bucket dredge and the universal dredge with digging buckets. In the case of the Strasburg municipal lake project the Soviet SRG-G suction dredge, which Soviet fitters introduced in use in the GDR, proved to be particularly effective.

#### Mud as Fertilizer

Since last fall specialists from the Rostock soil improvement combine have been removing sand and soft mud, which came from the Rhin, from the bottom of Lake Dreetz in Kyritz Kreis. They are making the 80-hectare lake 80 cm deeper to about 5 meters. A total of 2.1 million cubic meters of mud are to be dredged out there. The steel monster from Rostock, which was put into the water with the help of Soviet floating tanks, pumps about 30 cubic meters of sand and soft mud onto the shore every hour. The same thing was done at the Suesser See, a large vacation center in Eisleben Kreis.

The mud from the lakes is a valuable organic substance which is widely used with success in agriculture or gardening. Thus, the mud of the highly eutrophied Havel lakes is clearly superior to manure and to low moor peat which was also tested on the sandy soils of Potsdam. Yields of fruit and vegetable crops on one hectare could be increased by one-third with the use of 300 cubic meters of mud.

But in order to achieve far-reaching success when cleaning up a lake and to achieve economic value, desludging is effective only in combination with other measures. What is the point of dredging a lake if the causes of its siltation are not simultaneously removed or lessened. That means the sewage must be cleaned or, if possible, diverted from the drainage basin.

#### Aeration of Water at Greater Depths

On Lake Arend in the Altmark, whose biological equilibrium was disturbed by heavy nitrogen and phosphate compound burdens on the water, a clarification plants was built first to impede the further introduction of sewage. Following that, a new process was used for the first time in the GDR to drain water at a considerable depth. The natural drains of the Altmark lake which immediately removed the oxygen-enriched surface water were blocked. Three pipes, 300 meters long, flexible and encased in flexible PVC sheets,

lead to the deepest point of the lake (49 meters) and drain off the water at that depth which is poor in oxygen but rich in nutrients. Since the water level is above the pipes, the water flows off without pumps. Thus, every hour 1,600 cubic meters of water for field irrigation are made available to agriculture.

Besides this draining of deep water, additional methods are used, for example, the processes developed in the GDR for aerating the deep water layers where the deep water is enriched with oxygen by especially designed equipment. A further method for improving the quality of the water is increasing the depth of the lake by damming. Thus, Schallentien Lake in Schwerin Bezirk will rise by 5½ meters in the next 5 years after an appropriate earth dam is built.

#### Optimal Plans for Fertilizing

All efforts of water management to clean our lakes and ponds would be inadequate if they were not simultaneously supported by appropriate measures by agriculture, fishing enterprises and even passenger-ship enterprises. A prerequisite for this is having, among other things, optimized plans in agriculture for fertilizing and proper fertilizing technology which are being implemented to an increasing degree in the work of the agrochemical centers.

In order to avoid additional organic burdens on our lakes because of the fishing industry it was agreed that new installations for industrial carp and trout production will be established primarily in flowing water, in dams for industrial water and in the outlet areas of lakes and reservoirs. In the GDR plant-eating fish, like the grass carp, the silver carp and the marbled carp, have been put into bodies of water since 1968 in order to decrease organic material naturally.

All these measures make the realization of the cleaning program possible. In addition to the great economic value, this also produces social results which are within the meaning of socialist environmental quality. The possibility of cooperation by all sectors of the socialist society provides good prerequisites for this.

12124

CSO: 5000

EAST GERMANY

BRIEFS

ENVIRONMENT CONVENTION--Berlin--The GDR Council of State has now ratified the convention prohibiting the military or otherwise detrimental use of methods and means of influencing the environment. [Excerpt] [East Berlin ADN International Service in German 1340 GMT 22 May 78 LD]

CSO: 5000

CONTROVERSY OVER CELJE ZINC PLANT POLLUTION CONTINUES

Ljubljana DELO in Slovenia 5 May 78 p 5

[Text] Ljubljana, 4 May 1978--The public furor generated by some concerning the toxic Celje sulfuric acid plant is not only much too vocal but borders on veritable hysteria. It seems that smoke from the stacks of a factory which is still on the drawing board has already distorted their vision so that they see things differently from what they are in fact.

Moreover, because the sulfuric acid project represents in all plans a pillar of expansion of the raw materials basis in this field, the attack directed at the Celje Zinc Factory is at the same time an attack on the development concept of the chemical industry in the republic, expostulated the representatives of the chemical industry at the press conference on this controversial project held in the Economic Chamber of Slovenia.

There is no doubt that Celje is one of the most polluted cities in Yugoslavia so that it truly cannot stand yet another "toxic" project, but why should the Celje Zinc Factory be the scapegoat? "The ratio between pollution released in the Celje air in winter, for instance, by households and other factories and that contributed by the Zinc Factory is 82:18," emphasized Jozica Farcnik, president of the executive council of the association of TOZDs [Basic Organization of Associated Labor] of the chemical and rubber industry at the Economic Chamber of Slovenia. "Despite increased production in the Zinc Factory the amount of SO<sub>2</sub> in the air in summer months has not changed in a few years. Should then pollution of Celje be attributed exclusively to the Zinc Factory?" asks Franjo Klinger, director of the factory. The paradox that emerges out of all the furor raised in Celje in connection with the proposed sulfuric acid plant becomes apparent when one considers that the new investment would reduce by at least 42 percent the pollution presently emanating from the Zinc Factory, and that the existing old sulfuric acid plant is a much stronger source of pollution than the new installation would be. The new plant, accordingly, would not further degrade but rather improve the air in Celje. Moreover, if an approximately 100-meter-high smokestack were to be built to penetrate the



inversion layer in the Celje basin the SO<sub>2</sub> threat would be reduced to a minimum as noxious gases from all the plants of the Zinc Factory could be removed to an altitude where they could cause no harm.

The petition of the Slovenian chemical industry is unequivocal. The new sulfuric acid plant which is needed primarily by the Zinc Factory, Chemicals Factories in Hrastnik and Moste, and the Uranium Mine at Zirovski vrh, is indispensable and will have to be built as soon as possible. The construction should have started 2 years ago as any further delays, naturally, only increase the costs.

Accordingly there is no question as to whether the factory has to be built, the only question is where its site will be. "The economically and ecologically best site is the area where the Zinc Factory is located," is the conviction of Franjo Klinger. Sulfuric acid has been manufactured in Celje since 1913. It is here that all the new technology experts and all the infrastructure exists. If the plant is sited elsewhere the expenses will be excessive. Should this turn out to be the case, the Zinc Factory will not be party to the investment.

According to the SEPO group of the Jozef Stefan Institute, which studies the environmental impact of the industry, the technology based on the double catalysis of pure sulfur and the location in the area of the old plant are quite acceptable provided that certain safety measures are observed, which the Zinc Factory is willing to do.

12070

CSO: 5000

CONFERENCE ON ENVIRONMENTAL PROTECTION BEGINS

Ljubljana DELO in Slovenian 9 May 78 p 1

[Article by Silvestra Rogelj]

[Text] Ljubljana, 8 May 1978--In Slovenia only 5 percent of streams and rivers remain unpolluted; therefore it is not strange that physicians attribute 60 to 90 percent of illnesses to unsatisfactory environment. Last year 12 million workdays were lost because of illness and accidents. Moreover, in the last 15 years 34,000 hectares of agricultural land was lost because of poorly planned building development while on the other hand increasingly more food must be imported--at present almost one-fifth of the total.

These are only a few data presented in his introductory report by Dr Avgustin Lah, vice president of the Republic Executive Council and president of the Republic Committee on Environmental Protection at the conference of opstina representatives on the environmental protection policy in Slovenia.

The conference, organized by the Republic Committee on Environmental Protection and the community of Slovenian opstinas was the introductory event of Ljubljana's Ecological Week the activities of which will be unfolding at the Ljubljana Economic Fairgrounds until the end of the week. Participating in addition to representatives of the opstinas were Dr Janez Milcinski, president of the Slovenian Academy of Arts and Sciences; Dr Ales Bebler, president of the Yugoslav and Slovenian League of Environmental Protection Societies, and A. Fairclough, president of the Committee on Environmental Protection of the Organization for Economic Cooperation and Development.

The morning conference was basically the first response to the recent remark of the president of the Socialist Republic of Slovenia to the effect that opstina authorities should become as familiar as possible with the objectives of environmental protection. Papers describing confluence of interests of the economy and environmental protection resulting in joint action were a direct introduction to the International Exhibition on Technology and Environment, the central event of this year's Environmental Protection Week.

The exhibition of resources, equipment, and methods for environmental protection, which has now become traditional and which this year attracted a record number (approximately 120) of exhibitors was formally opened by Vinko Hafner, president of the Republic Council of the League of Trade Unions, following the conclusion of the conference. In his opening remarks he pointed out, among other things, that the desire for protecting the environment does not imply that we must abandon construction of chemical plants and forgo construction of housing developments and highways. "We must not endeavor to preserve nature in its idyllic state while man is left to starve as some bloated bourgeois demand," he said, pointing out that environmental protection cannot be divorced from the production process which is, in effect, demonstrated by the present exhibition.

In the afternoon the League of Environmental Protection Societies and Organizations held a topical consultation on ecological reviews which dealt mainly with the hitherto rather neglected problem of noise abatement.

12070

CSO: 5000

ROLES OF INTEREST COMMUNITIES IN ENVIRONMENTAL PROTECTION NOTED

Ljubljana DELO in Slovenian 12 May 78 p 5

[Article by Silvestra Rogelj]

[Text] Ljubljana, 11 May 1978--"The Resolution of the Eighth Congress of the LCY emphasizes, among other things, that self-managing interest communities must consistently assert themselves as the places where we coordinate our interests including, consequently, the interest in a healthy environment which is expressed in an increasingly more vocal manner by the working people and citizens," said Peter Bekes, member of the presidency of the Republic Committee of the Socialist Alliance of the Working People [SAWP], at the today's conference on the role and objectives of self-managing interest communities in environmental protection. The conference which was held in conjunction with Environmental Protection Week was organized by the Council of the Republic Committee of the SAWP and the Republic Committee on Environmental Protection.

Last year the presidency of the Republic Committee of the SAWP emphasized that environmental protection is not some kind of a separate and abstract activity which could be treated apart from the rest of socioeconomic interests and that it would not be effective to formulate specialized interest communities which would deal with environmental protection in general. This would represent alienation of the interests from the interested parties. What is necessary is dealing with problems of whatever nature they may be within the context in which they arise. Existing self-managing interest communities must attempt to resolve these problems in the domain related to their own sphere of activity. Moreover, the constitution provides that self-managing interest communities may for purposes of coordination of approaches to environmental problems establish special coordinating bodies, but this option has hitherto never been exercised in practice, said Peter Bekes.

Numerous development plans of the organizations of associated labor either ignore the environmental impact altogether or only pay lipservice to it. Finally, we are procrastinating with the establishment of a community for protection against air pollution which shows that as citizens we are more aware of the need for environmental protection than when we act as industrial producers.

ARGENTINA

DANGER OF SCHISTOSOMIASIS FROM ITAIPU WARNED

Paris AFP in Spanish 1301 GMT 9 Jun 78 PY

[Text] Buenos Aires, 9 Jun--Gen Julio Cordero, director of the labor ministry's hygiene and safety department, has said here that construction of the Brazilian-Paraguayan Itaipu hydroelectric dam could spread endemic diseases in Argentina.

Cordero told the Argentine Ecological Society that the concentration of Brazilian workers from the River Plate basin states, affected by schistosomiasis at the Itaipu project, could spread that endemic disease throughout northern Argentina.

He indicated that schistosomiasis causes the death of 4 percent of the affected and disability to a much higher percentage and that it is widespread in Brazil.

He added that the disease can be considered a work disease at Itaipu and that it will be a threat to the Argentine population, which could be contaminated.

Among the measures proposed and studied by the Argentine Government to meet this risk he mentioned improvement of sanitary conditions, preventing water contamination, installation of sewerage systems, supplying pure potable water for all purposes, sanitary education and others.

CSO: 5000

ECOLOGIC DETERIORATION THREATENS FUTURE CANAL OPERATIONS

Panama City Televisora Nacional in Spanish 2315 GMT 23 May 78 PA

[Interview with Dr Pedro Galindo, director emeritus of Gorgas Memorial Laboratory, by Mario Velasquez, on 23 May 1978--recorded]

[Text] [Question] Dr Pedro Galindo, a few weeks ago you sent me a letter expressing your concern over the fact that an appreciable number of Panamanian peasants have been settling in the wooded areas of the Canal Zone, destroying with their matches and machetes the vegetation covering which, as you pointed out in your letter, constitutes the only protection guaranteeing the satisfactory functioning of the canal after the year 2000. Dr Galindo, on this occasion I would like you to explain further your concern and the situation which you are criticizing.

[Answer] First of all, Mario, I would like to thank you for this opportunity to address the Panamanian people in order to express my concern over what is occurring in the Panama Canal Zone Territory. For several years now, Panamanian peasants have been entering the Panama Canal Zone to get arable land, or what they regard as arable land, which they then use to provide their livelihood.

In doing this they have been deforesting territory, that until then had remained in its pristine state, thus endangering the future functioning of the canal by interrupting the hydrological balance that the jungle helps maintain in these ecosystems. It seems to me that if these practices continue this year, as we approach the time when Panama will receive this territory, the danger will be further intensified because there is no authority to protect this area adequately. We expect an even larger number of peasants to settle in this territory in October, when the [word indistinct] begins. Thus, when this land passes to Panamanian hands, we will find a largely deforested territory in a state of degradation.

[Question] Dr Galindo, you have publicly voiced your concern over this situation, pointing out that both private sector and the government itself should bear these environmental conditions very much in mind when discussing the use of the Panama Canal lands and their role in our country's

economic development. On this occasion I would also like you to explain to what extent this concern over the Canal Zone's environment is of long-range importance for our development and economic well-being.

[Answer] As I have already indicated, this, of course, is of basic importance because if the environment is not protected, there will be no future functioning of the canal. The Panamanian authorities know this very well and they have shown their concern over this situation. The Agricultural Development Ministry's Department of Renewable Natural Resources [RENARE] has opened its central offices in the Alajuela Lake Basin because it has been determined that that basin shows a marked level of ecological degradation. They are currently negotiating a loan with the International Development Agency in order to reforest this area and return it to its original state.

It seems to me, nonetheless, that RENARE's efforts are being undermined by other government sectors which do not understand these things and whose main goal is to carry out development projects that will degrade the environment. Therefore, I think it is important that the private sector exert pressures, because the private sector, of course, is concerned over the country's future, as well as that of their children and grandchildren. So I think the private sector's direct intervention in these canal affairs will have very beneficial results. I believe the canal's future is in the hands of the present generations, which must preserve it for the future generations. The time to act is now.

[Question] Pedro, do you not think that we are talking about something that is somewhat unfamiliar to most Panamanians? I am under the impression that in our country there is a need for more education about the importance of protecting the environment. That subject is somewhat foreign to the concern of Panamanians, so what recommendations could you make in order to develop in this country a serious concern over this subject of environmental protection.

[Answer] I think this is the Panamanian state's duty, which must be implemented by the Education Ministry. An educational campaign on this subject should be launched right away in all public and private schools, particularly at the high school level. The Smithsonian Institute, which under the treaty will preserve certain Canal Zone areas in their pristine state for research purposes, is currently taking steps to turn one of these areas, the Bohio Peninsula, which is near Barro Colorado, into an educational park. The Smithsonian Institute plans to finance this project and put it into the hands of competent Panamanians capable of giving instruction to Panama and Colon high school students who will be able to arrive there on the train. Field classes will be given on this subject so that students may be able to appreciate the importance of preserving the forests.

[Question] Pedro, I thank [you] very much for your statements on this problems of the environment. Although this is the first time you have explained

these things on this station, I would like to tell you that I believe this topic is of such importance that it might well be worth it to continue discussing it on some future occasion. It is fundamental to the protection of our environment. Thank you very much.

[Answer] I thank you Mario, for this opportunity and may this program help the government and the private sector to become deeply interested in doing something about this situation in the not too distant future.

CSO: 5000



# MASSIVE LANDSLIDE HITS EXPRESS TRAIN

Teheran TEHRAN JOURNAL in English 25 May 78 p 3

[Text] **TEHRAN —** At least five passengers were killed and 10 injured yesterday when a massive landslide hit the Tehran-Gorgan express train 240 kilometers northeast of here.

The landslide, which followed heavy rain in the mountainous area between the Arsak and Dogal stations, hurled an express wagon off the tracks.

Around 100 passengers were aboard the train but reports from the wreck site have not

specified the exact number killed or injured in the derailment.

Eyewitnesses claim at least four men and one woman died when the landslide hit the rear section of the train. Luckily a large number of carriages had

already entered a tunnel, they said.

Injured passengers were rushed to nearby hospitals while others were transferred by bus to the capital.

A State Railways Authority official said the 150-meter long landslide had killed only five people but this first official account was released very shortly after the derailment.

One passenger, a truck driver known only as Taqva, said he first heard a thundering sound followed by a heavy impact as the train ground to a halt.

"A passenger wagon was knocked off the tracks and crushed by heavy rocks. My companions helped me pull two bodies from the wreckage — a man and a woman," he said.

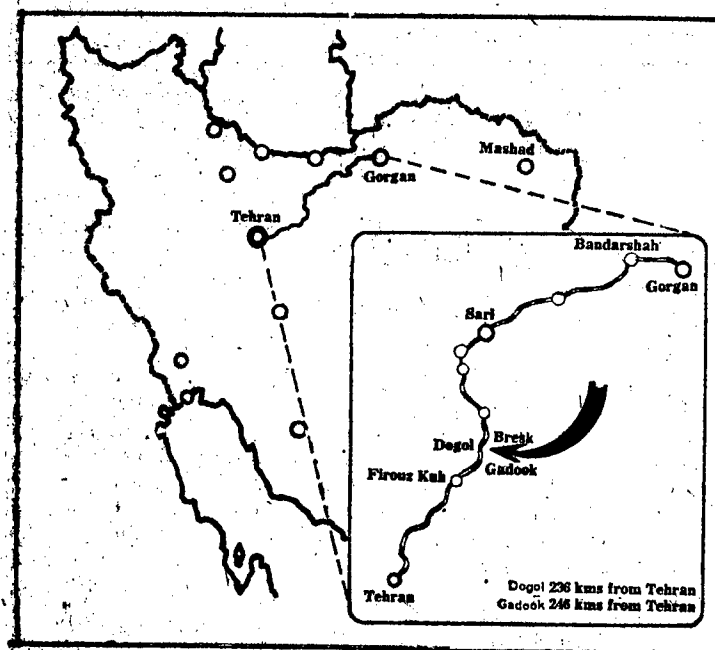
"Another three people died but the number of passengers injured was too large to count," he added.

Another passenger, Roghai Faizabadi, reported hearing the agonized cries of children and women from other wagons as the train suddenly stopped.

But some passengers claim 10 people died in the accident, contrary to a State Railways statement issued yesterday listing five dead and 10 injured.

Railway authorities said the carriages left undamaged by the rock fall were towed to the Caspian resort city of Sari by a new engine.

The two locomotives and one passenger bogey wrecked in the landslide were still lying unmoved at the site, the officials added.



IRAN

BRIEFS

KHORASAN FLASH FLOODS--Mashad--Flash floods yesterday struck the small town of Isfarian and surrounding villages in the eastern province of Khorasan killing a number of people and destroying many village houses. Floods caused tremendous property damage to farm lands in the villages of Kalat, Araqi, Mahmoudi, Brenj, Roe en and Mehrabad killing scores of cattle. The local administration aided by the Red Lion and Sun Society have started supplying essential relief to the affected families. Officials said the floods struck in the night when all village residents were asleep. [Text] [Teheran TEHRAN JOURNAL in English 30 May 78 p 3]

CSO: 5000

## MOZAMBIQUE

### DETAILS OF DAMAGE CAUSED BY ZAMBEZI RIVER FLOODS

#### Regional Damage Detailed

Maputo NOTICIAS in Portuguese 1 Apr 78 p 1

[Text] The recent heavy flooding of the Zambezi River continues to create serious problems throughout its valley. Meanwhile, efforts to rescue victims and construct communal villages for refugees in Tete, Sofala, and Zambezia, the hardest-hit provinces, are being carried out vigorously.

In Zambezia, according to information from the Radio Mozambique provincial radio station, the floods extend from Morrumbala district to the edge of Inhassunge locality in Quelimane district over an expanse of about 150 kilometers, whereas the left bank of the Zambezi River is normally 80 kilometers from Inhassunge.

Beyond the human and material damages we have reported, 608 persons were made homeless and 200 farms were flooded in Chilomo locality of Chire district, near the Malawi border. Three schools, a health station, a store, and a customs office are also under water.

On 29 March the water receded 50 centimeters in Chire, but another rise is expected because the end-of-March spring tide is causing Zambezi tributaries to flood.

Four tractors and their accessories were also lost in Zambezia and three health stations in the province were submerged.

In Inhangoma, Sofala province, 5 flour mills were lost and on 29 March 83 men, 112 women, and 262 children were evacuated to Pinda.

The water level continues to rise in Caia.

To assist in organizing the flood victims into communal villages, Marcelino dos Santos, member of the FRELIMO Permanent Political Committee and minister of development and economic planning, was in several of the hardest-hit districts of Sofala province during the past few days to hold meetings with the people.

According to information from Chemba, rescue operations ended in evacuation of all victims, and the work of organizing communal villages is now underway.

In Mopeia, Pinda, and Megaza in Zambezia province the people are intensifying their organization of collective living. In Mopeia 678 temporary houses are almost ready, built within 2 weeks. In Pinda the population began to build a communal neighborhood, while in Megaza a communal village for 100 families is being constructed, with the majority of housing plots already staked out.

#### Solidarity Movement

A few days ago a FRELIMO National Headquarters representative delivered to the first party secretary and governor of Zambezia province, Bonifacio Gruveta, the 3,000 contos allocated by the FRELIMO chairman's office as aid to the flood victims. Gruveta stated at the time that the money will be used in the best way possible, mainly for assisting in the construction of communal villages.

Meanwhile, other donations continue to be received by the Zambezia province government. Outstanding among these are contributions from workers in companies located in Quelimane that total 100 contos and 30 cases of soap.

To assist flood victims in all stricken provinces, workers of the Malema Tobacco Guild yesterday delivered 13,750 escudos to the first party secretary and governor of Nampula province, Joao Americo Mpumo, during his visit to that state enterprise. During the meeting the governor later had with the Malema Tobacco Guild workers, they affirmed in a message their determination to go forward with the greatest vigor in the battle to increase production and productivity.

In Inhambane, 1,200 escudos were delivered yesterday to Governor Joao Pelembe at the close of the meeting of the province's district and locality administrators. Together with this action, the Inhambane administrators also delivered a message of condolences for the great human and material losses that took place in the three provinces affected by the Zambezi River floods.

#### Cuba Sends Medicine

Forty-nine cases containing medicine to aid the victims of the floods that have swept our nation arrived by air in Maputo Wednesday from the Republic of Cuba.

The gift, made by the Communist Party of Cuba to the Mozambican people, is in the context of the militant solidarity that unites the Mozambican and Cuban peoples, their two parties, FRELIMO and the PCC [Communist Party of Cuba], and their two states.

## 30,000 People Affected

Maputo NOTICIAS in Portuguese 4 Apr 78 p 1

[Text] About 30,000 persons from Luabo locality, of the over 54,000 inhabitants of this area of Chinde district--another front of the flood in Zambezia province--were endangered by the waters of the Zambezi River and its tributaries, whose level exceeded by 60 centimeters the height reached in the 1926 floods, the highest previously recorded there.

According to information gathered by our reporting team during a trip to Zambezia, 2,302 persons had been evacuated by 30 March from flooded areas with the aid of six vessels--a motor launch and a gasoline launch from Sena Sugar Estates, the Naval Services boat "Sabre" from the port of Chinde, which is closed, two rubber launches sent from Maputo, and an outboard motorboat.

The evacuees were taken to the Sena Sugar Estates camp in Coaxe, to Checanhame, and the dike on the outskirts of Morrumbala district that protects the sugar-cane plantations, where they improvised shelters. Three persons--two men and a 7-year-old child--died in Luabo.

However, similarly to what happened on other flood fronts, the population was left with practically nothing, having been able to salvage only some meager belongings. Many farms were virtually destroyed, with the already reported loss of more than 1,500 hectares of various crops. About 2,500 thatched huts were also swept away by the force of the water (in some places the current ran at 75 to 80 kilometers per hour).

Besides these private farms, those of some agricultural cooperatives were hit, notably "Ufumuate Ubuera" ("Our Fortune Has Come"), with 90 members, lost 9 hectares of corn and rice; Inhamitimbira lost 7 hectares of rice; Muananiva saw 5 hectares of rice destroyed by the flood and the preoperative of Chissamba lost 15 hectares of rice and "mapira." The "Eduardo Mondlane" agricultural cooperative on Salia Island (Luabo) lost 50 hectares of rice and the Chacurna collective farm lost 25 hectares of the same cereal.

In reporting that 160 hectares of the Sena Sugar Estates sugar-cane plantations were flooded, it is expected that in large part they will be saved because they were already quite high. The company's electrical power plant was inundated, jeopardizing its production.

In regard to cattle, the 9,750 head of the sugar-cane company's herd were taken to safety, as were 38 head belonging to the "People's Assembly" cooperative on Salia Island which, however, are sick; medicine has been sent for the cattle. Likewise, on 31 March 270 cattle belonging to a private stockbreeder were taken to safety.

In the locality of Luabo alone, nine elementary schools were flooded, affecting 950 pupils. Three stores that supplied commodities to the population and a health station are also closed due to flooding.

All connecting highways to Luabo were damaged and will have to be reopened. The same thing happened to a large number of roads connecting with the hinterland. Four wooden bridges were completely destroyed, as well as the Chacume highway bridge.

According to local political and administrative services, nothing is being said for the time being about organizing the flood victims into communal villages because all areas of Luabo are low-lying and flooded. The problem of organizing the people, however, will be studied thoroughly.

Another locality in Chinde district that was recently affected by the flood caused by opening the eighth floodgate of the Cabora Bassa dam in Micaune, about 80 kilometers from Quelimane.

It is not known at the moment how many people were affected in this zone; it is known only that the settlement is divided in two by the water and that the Alfazere settlement is completely inundated, although there is no danger to its inhabitants.

In Micaune about 2,700 head of cattle belonging to a private breeder, although on high ground, are in a critical situation because they have no fodder. Another 200 head are in danger, completely isolated on a small hill. The MADAL [expansion unknown] cattle are safe.

In regard to food supplies for the Luabo flood victims--who in the beginning were being helped only by the Sena Sugar Estates, whose reserves were insufficient--the provincial government has sent 16,000 kilograms of flour, 2,000 kilograms of beans, 200 kilograms of salt, as well as some (insufficient) clothing, fuel and school supplies for the pupils whose schools were flooded. Medical assistance is promised.

Meanwhile, as soon as the situation in Micaune became known, members of the party and the government went to make a reconnaissance there in order to determine priorities and what aid should be sent there.

Finally, it is known that the party and the government at the national level are studying the possibility of supplementing the amount of 3,000 contos withdrawn from the Solidarity Bank and sent to Zambezia, inasmuch as the situation resulting from the floods is alarming and undoubtedly much more serious than was anticipated.

#### Food for Flood Victims

Maputo NOTICIAS in Portuguese 2 Apr 78 p 1

[Text] The Zambezi River, the largest in Mozambique and one of the largest on the African continent, flooded. Several of its tributaries and other waterways also flooded as they never have for the past 30 years, according to the statements of some residents of Zambezia province--men and women of

advanced age who have already lived and seen much. But they have never seen the river so "angry." So "angry" that, in its fury, it swept away people and animals, farms and houses, schools and health stations, telephone poles and highways. So "angry" that the people were afraid of it.

The rivers flooded and devastated vast areas of Tete, Zambezia, Manica, and Sofala provinces. We will report today on the situation in Zambezia province, where a team of our newspaper's reporters spent 10 days. The hardest-hit areas in this province were Mopeia district, Luabo and Micaune localities in Chinde district, the administrative locality of Chire and the Megaza and Pinda political localities in Morrumbala district.

More than 65,000 persons were affected in these areas, where more than 12,000 --not counting 5,437 residents from the area of Inhangoma (in Tete) who took refuge in Morrumbala (in Zambezia) because it was closer--were evacuated to safety and will be assisted by this province's services. It is reported that 25 persons died in Zambezia.

Many persons, however, have yet to be evacuated, not only because the flooded areas are quite vast and the means of rescue extremely insufficient, but also because some do not want to leave the region where they live.

A large part of the flood victims lost all or nearly all their belongings. In fact, the river carried away their farms; approximately 10,000 hectares of various crops were lost; their houses, more than 8,000 thatched huts, were destroyed, and their small animals--many hundreds of pigs, goats, and chickens--were lost.

Not content with this, the river flooded and destroyed some social service structures, notably 22 schools, 3 health stations, 7 stores for selling essential commodities, 2 agricultural tractors and implements, 5 flour mills, many means of communication, not to mention 2 customs offices on the Malawi border and a People's Forces barrack.

Likewise, many thousands of head of cattle were endangered on the various flood fronts, but nearly all of them were saved (only some 10 head were lost, while 200 others are in a very critical situation in the area of Micaune).

Due to the seriousness of the situation, efforts were made immediately to save the people and their belongings and to give the most aid possible. Thus, the provincial government appointed teams which carried out various tasks, from evacuation of persons and animals to distribution of material aid and organization and mobilization of the refugees into communal villages.

As for direct assistance--foodstuffs, clothing, building materials and fuel --the provincial government has sent to the affected areas a total of 78,500 kilograms of flour, 3,495 of beans, 3,900 of sugar, 260 of rice, 1,500 of salt, 9.6 of powdered milk, 96 cases of tea, and 20 cases of soap.

The Zambezia Company is slaughtering two head of cattle every 3 days to supply the refugees in the Pinda (Morumbala district) area.

At the same time 308 quilts and blankets, 800 hoes, 250 scythes, 180 hatchets, 20 spades, and 10 picks were furnished along with 22,000 liters of fuel.

Despite these data, the total damage is not yet known exactly. The provincial government is waiting expectantly for a complete report from the various affected districts with data regarding population affected, persons evacuated, total farm area lost, bridges and highways damaged, among other things--data that for the most part can only be compiled after the waters recede.

#### Donations

Meanwhile, a broad-based solidarity movement is beginning to emerge on behalf of the victims and some donations intended to aid the flood victims have already been sent to the Zambezia government. Beyond the 3,000 contos sent by President Samora Machel, the workers in the Finance Ministry gave 1,625 escudos, 3 shirts, a pair of shoes and socks, some trousers, 3 boy's shirts and a pair of child's shorts. The Aboobar Kara firm gave 50 contos; the Zambezia Footwear Industry and the Aboo Varinda gave respectively 25 contos, 25,250 [escudoes?] and 10 cases of tea.

In turn, the Geralco firm gave 20 cases of soap and the workers of the "Mozambique Fashions" commercial establishment gave 5,000 escudoes.

In view of the consequences of the Zambezi River floods, a permanent commission was formed in Pemba to assist the persons affected by the floods, according to the NOTICIAS correspondent in the Cabo Delgado provincial capital.

Formation of the commission was reported during a meeting between the central party agencies and the government of Cabo Delgado, led by the first FRELIMO secretary and governor of the province, Raimundo Pachinuapa.

This commission, headed by the chief of commercial services of Cabo Delgado, is also composed of various officials of the state administration, including Transport Services.

According to Raimundo Pachinuapa, the permanent commission has the task of carrying out an intensive effort of mobilizing the Cabo Delgado popular masses for the purpose of showing the extent of their spirit of solidarity, contributing money, foodstuffs or clothing.

#### Messages

Messages addressed to the president of FRELIMO and the RPM [People's Republic of Mozambique], Samora M. Machel, continue to arrive in Maputo from various parts of the world, expressing grief for the victims of the Zambezi River floods and solidarity with the Mozambican people and especially the homeless populations.



The latest messages reported yesterday by the office of the president of the republic are from the chief of state of Zambia, Kenneth Kaunda, and the chief of the Federal Military Government of Nigeria, Olusegun Obasanjo.

#### Damage in Morrumbala District

Maputo NOTICIAS in Portuguese 3 Apr 78 p 1

[Text] Along an expanse of about 300 kilometers in Zambezia province alone, the waters of the Zambezi River and some of its tributaries rose extraordinarily due to heavy rainfall and opening of the Cabora Bassa floodgate, affecting thousands of persons, thousands of hectares of various crops, and thousands of head of cattle.

As we reported previously, one of the districts hit hardest by the waters was Mopeia, along a flood front of 156 kilometers, followed by Morrumbala, where the Chire administrative locality and the Pinda and Megaza political localities were affected by the rising Chire River, one of the Zambezi's tributaries.

According to what is known thus far, more than 10,000 persons in this district alone were affected: 5,000 in Chire, 2,500 in Megaza, and more than 2,500 in Pinda. With the initial help of the people's dugout canoes and later the rescue boats sent by the government and several private companies, 2,913 of these persons could be evacuated; 3,334 managed to escape by their own devices to higher elevations, 441 of them to Malawi. Another 5,437 inhabitants of Inhangoma Island are sheltered in areas of Pinda (Aguas Quentes) and Megaza, to be assisted by the province government.

As a matter of fact, of the 5,000 flood victims in Chire locality, 1,182 were evacuated, and 200 hectares of farmland, more than 300 wattle-and-daub houses, 3 masonry buildings (the customs office and 2 stores), 3 schools, a health station and 80 kilometers of roads were lost. Despite the extent of the calamity that hit Chire, all the cattle were saved and taken out of danger to high ground.

In the Pinda political locality, where 2,500 persons were affected, about 1,200 could be evacuated from the waters surrounding them and about 5,000 persons from Inhangoma (in Tete) have taken refuge there; 80 hectares of crops, 200 straw-thatched huts, and the industrial fair were destroyed in this area.

In Megaza, with 2,500 inhabitants, 1,188 persons--731 from Pinda and 457 from Inhangoma--were sheltered, while 74 hectares of crops and 4 masonry buildings were lost; 2 stores, the customs office and the People's Forces barracks were lost. Here, too, all the cattle were saved.

## Organization of Communal Villages

The thousands of flood victims lost everything or almost everything--their homes, their farms, their animals. In view of this tragic situation--which, with greater or lesser intensity, affect the population bordering on the Zambezi River every year and which this year reached huge proportions--it was decided to put into effect the process of organizing the flood victims into communal villages located in safe areas out of the river's reach.

Thus, in Chire locality the people have chosen an area (not final) and have been sent some construction implements, notably 20 spades, 10 picks, 100 hoes, 50 scythes and 60 hatchets.

In Pinda a place was also chosen for constructing a communal village, situated across from the hospital, where plots of land have begun to be marked off and are gradually being occupied.

Also in Megaza an area was chosen for building a communal village, land which has all the requirements for that purpose according to the opinion of the sector's provincial administrator who has meanwhile given directions for beginning the work immediately.

An interesting aspect to be noted in this locality is that, of the 457 persons from Inhangoma (Tete) sheltered here, 395 decided to participate in the system of collective living that is about to be organized, deciding to remain in Megaza and joining the communal village that is to be constructed. Only 62 intend to return to Inhangoma when the waters recede.

In fact, many of the people hit by the flood, as we ourselves can confirm--even the oldest who, precisely because of their advanced age, would be most reluctant to leave the places where they always lived to accept a completely new way of life--express enormous enthusiasm and strong desire to organize themselves in communal villages.

In Mopeia we witnessed a scene that illustrates this determination and enthusiasm well. A group of men (some elderly) who were cutting stakes for laying out their communal village listened attentively to the words of a peasant who has already lived for 2 years in one of these organized centers of community living as he explained how they lived there, the size of the plots of land, the type of house (three rooms, a living room, and a hallway) and how much land was left for their individual farms and animals in addition to the collective land.

"We have become afraid of the river, which carried away everything we had, destroyed all our work, killed some of us and could kill more. We don't want to work for the river any longer and the people who are thinking of returning there and those who have not yet left are not thinking wisely. Now we are going to live organized in safe places," is the way a great many people with whom we spoke expressed themselves.

And so the spirit of these people must be made use of in mobilizing and organizing them properly in communal villages, the only way they can overcome all obstacles, overcoming hunger, nakedness and poverty.

#### Donations For the Victims

The floods did not afflict Zambezia province alone, as is well known. In Tete, Sofala and Manica provinces also, thousands of persons were affected, thousands of hectares of crops were lost.

A great movement of solidarity has begun to be generated in support of the flood victims and various donations have begun to flow into the governments of several provinces. In Zambezia, besides the donations announced in previous issues, ENACOMO [expansion unknown] workers sent 1,000 blankets and 10 cases of meat.

For their part, representatives of 14 companies in the city of Beira, Sofala province, sent donations valued at about 1,340 contos and several pieces of clothing to the provincial government. Finally, in Nampula province, the Tobacco Guild workers of Malema gave 13,750 escudos to Governor Americo Mptumo during a visit he made to that state company's facilities.

#### Flood Waters Receding

Maputo NOTICIAS in Portuguese 6 Apr 78 p 1

[Excerpts] Information received yesterday from Quelimane about the flood situation on the Zambezia front indicates that the waters of the Zambezi River and its tributaries have been receding to some extent during the last few days, permitting the work of reconstructing lives and organizing the victims collectively to be accomplished more rapidly.

By 2 April about 30,000 persons had been affected in Luabo locality in Chinde district alone, of which about 6,966 persons were evacuated. The Zambezi River floods caused other incalculable human and material damages, as we have been reporting since the floods began during the early weeks of March.

To study the best way of overcoming the losses suffered by the population of Chemba, Marromeu and Caia districts (Sofala province) and Luabo, Mopeia and Chinde districts (Zambezia), a meeting led by the director of the National Communal Villages Commission, Joao Baptista Cosme, was held in Marromeu Tuesday.

#### Families Evacuated

Maputo NOTICIAS in Portuguese 8 Apr 78 p 1

[Text] The Radio Mozambique station in Beira indicates that 10,000 families were evacuated in the areas hit by the Zambezi River floods in Caia district, Sofala province, citing sources in that district.

Meanwhile, rescue operations for the victims of this calamity are being carried out. The growing movement for constructing communal villages, following work by the rescue teams and the promotion of collective centers, is noteworthy.

In Cabo Delgado, moreover, the movement to assist flood victims in Sofala, Zambezia and Tete provinces continues to gain momentum, particularly in the inland districts.

According to the Radio Mozambique provincial broadcasting station, the population and the merchants of Montepuez district delivered 1,838 escudos to the district administrator's office for that purpose.

Finally, to permit a coordinated channeling of donations intended for the Zambezi River flood victims, a commission called "Provincial Commission for Aid to Zambezia River Flood Victims" was formed recently in Maputo in the provincial party headquarters there.

The commission has the task of receiving donations from all those who wish to contribute to aiding the families affected by the floods. This commission has received the sum of 10,000 escudos from the Maragra workers.

#### Survey of Damage

Maputo NOTICIAS in Portuguese 9 Apr 78 p 1

[Text] The director of the Commission for Communal Villages, Joao Baptista Cosme, granted a press conference late yesterday afternoon during which he described the current situation in the areas affected by the Zambezi River floods and spoke of the material resources needed to overcome the problems caused by that natural calamity. Domestic and foreign journalists as well as representatives of international organizations and friendly nations were present at the meeting.

"The floods which devastated the entire Zambezi Valley are the worst recorded in this century," Joao Baptista Cosme began, adding later that "they had their origin in the torrential rains in Zambia and the British colony of Southern Rhodesia, aggravated by the sudden opening of the Kariba dam, which made it necessary for the Cabora Bassa dam to open its eight floodgates (an event that theoretically should happen only once every 100 years)."

#### Damages and Their Cost

Speaking of the most important damages caused by the Zambezi floods, the official mentioned first Tete province, where he announced that in the district seat of Mutarara 5,542 persons were made homeless and 3,555 hectares of crops were lost.

In Amanze locality, 2 persons died, 13,000 were made homeless, 3,026 hectares of crops were destroyed and 1,724 goats were lost. In Charre locality, there were 6 persons dead and 10,026 homeless, with 5,013 hectares of crops lost.

Inhangoma locality, an island with a total of 63,142 inhabitants, was almost totally submerged, only 14 square kilometers of its area not being covered by water. Damages recorded were 23 persons dead, 61,000 homeless, 11,520 hectares of crops destroyed and 1,000 head of cattle lost.

In Mutarara district, furthermore, damages to schools reported were 8 units completely destroyed and 45 others damaged and flooded.

Regarding the province of Manica, in Tambara district 3 people died, 14,000 were homeless, 7,000 hectares of cotton, sunflowers and corn were lost and 14 schools and 3 people's stores were destroyed. In Guro district, although there is still a great lack of information because the communication lines were cut, it is known that the number of homeless is 8,000 persons and the damaged crops were about 2,500 hectares.

In Zambezia province, in Mopeia, Chinde and Morrumbala districts, 2 persons died, 30,000 were made homeless, 9,000 hectares of crops were destroyed, as well as 20 schools, 5 stores and 5 small flour mills.

In Sofala province, in Chemba district, 9,960 persons were homeless and 4,000 hectares of crops and 3 schools were destroyed. In Caia district the number of persons made homeless was 23,414, 5,000 hectares of crops were lost and 200 schools were destroyed. Finally, in Marromeu district, 9 persons died, 44,000 were made homeless and 8,800 hectares of crops and 45 schools were destroyed.

From computations made of material damages, that is, crops and housing destroyed; clothing, furniture, dishes and domestic animals lost; highways, railway lines, bridges, schools, stores, machinery and other things destroyed or damaged, it was determined that the amount of this reached 2,094,790 contos.

Expenses related to rescue operations and assistance to victims (furnishing food for 10 months, clothing and blankets, working implements and seeds) total 1,294,000 contos. We can thus estimate that these floods will cost us more than 3.3 million contos.

#### International Assistance Needs

Thus, the needs that Mozambique has for immediate international assistance to minimize the effects of the floods are various. They include food, clothing, school materials, working implements, seeds and medicine.

Food aid is needed to make it possible to feed 158,000 adults and 60,000 children below 12 years of age for 10 months. For the adults 3,109.6 tons of various commodities are needed monthly, which is equivalent to saying

that 31,096 tons are needed for the 10 months. For the children 1,056.6 tons are needed monthly, which is the same as saying that 10,506 tons of various commodities are needed for the 10 months. Hence, 43,603 tons of foodstuffs, such as dried fish, canned meat and fish, condensed milk, vegetable oils, beans, corn and rice are needed for the 10 months.

As for clothing, 243,783 "cupulanas," the same number of blouses and 153,282 pairs of shoes and/or sandals are needed for the women. For the children, 120,000 trousers and the same number of dresses and shirts are needed. In addition to all this, about 200,000 quilts or blankets are needed.

Also needed are 500 tons of soap (for 10 months), 140,000 hoes, 50,000 scythes and the same number of hatchets. In school supplies, 300,000 notebooks, 160,000 pencils, 300 blackboards, 1,000 boxes of chalk and 30,000 erasers are needed.

In seeds we need 2,190 tons of corn, beans, peanuts, sesame, tomato, pumpkin, sunflower and garden vegetable seeds.

"The districts affected by the floods have a high prevalence of malaria, as was verified in the malaria measurement survey carried out in 1976-77," said Joao Baptista Cosme, who later added that "when the waters begin to recede, numerous small and large pools of stagnant water will be created, which will be a perfect breeding ground for mosquitos and will aggravate the situation even more and lead to a high mortality rate, mainly among children of less than 5 years of age."

For this reason, materials for preventing and treating disease are needed immediately. Among the priority materials the director of the Commission for Communal Villages stressed are 400 "Hudsen" backpack tanks, 200 "filfas," and 50 "Fontana" units for spraying insecticides. To combat malaria, 50 million chloroquine or alodiaquine pills and 500,000 milliliters of chloroquine syrup are needed.

In addition to this, other medicines are needed, such as aspirin, penicillin, sulfaguanidine tetracycline, antitetanus serum and others; 50,000 first-aid kits are needed.

In concluding the meeting, Joao Baptista Cosme appealed to the representatives of international organizations and friendly countries to render immediate assistance to our nation for the purpose of minimizing the effects of this natural calamity.

An interprovincial commission which will have its headquarters in Beira, Sofala province, was created for receiving any aid, from outside of or from within the nation.

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# LOCUST SWARMS REPORTED IN THREE NORTHERN STATES

Kaduna NEW NIGERIAN in English 25 May 78 pp 1, 3

[Excerpt]

**INVASION of farmlands by voracious locusts have been reported in three northern states. The states are Sokoto, Kano and Kaduna. The insects were said to have caused considerable damage to farm crops.**

**A report from Sokoto confirmed the sighting of locusts (of the grasshopper family) in**

**four local government areas of the state - Talata Mafara, Wurno, Gusau and Argungu.**

Giving details in Sokoto, the State Commissioner for Agriculture and Natural Resources, Dr. Bello Haliru Mohammed, said that in Talata Mafara Local Government area, about 1,000 hectares of newly planted millet were devoured by the menacing insects.

He said that in the Wurno Local Government area, they also destroyed crops in farmlands

covering an area of 16 square kilometres.

The commissioner also confirmed that large parts of Gusau and Argungu local government areas were voraciously attacked by the locusts.

And in Kaduna State, a large swarm of the grasshoppers have been sighted in various parts of Dutsin-Ma Local Government area. According to the area agricultural officer, Malam Usman Batagarawa, the pests have caused enormous damage to farm crops.

The A.A.O. said a team of pest control officers and their assistants armed with chemicals have been deployed to the area to eliminate the hoppers. He disclosed that a sample of the grasshoppers collected from the invaded area have been sent to the Ahmadu Bello University Agricultural Research Institute, Zaria, for analysis.

A report from Kano said the invasion of farmlands by the locusts in the state have increased

with the onset of the rains as eggs laid by the insects last year began to hatch.

During an interview with the New Nigerian, a senior agricultural officer with the Plant Protection Division of the state's Ministry of Agriculture, Malam Abdul-Azeez Abba, confirmed that there have been reports of invasion of farmlands by Sahelian Plague Locust in the northern parts of Kano State.

The areas so far invaded by the locusts are Gezawa, Minjibir, Dambatta and Gumel. Malam Abdul Azeez said that following the detection of the locust invasion, the ministry has distributed pesticides in the areas where outbreak had occurred and in the area where outbreak was anticipated.

He said that over 3,000 kilograms of a chemical called "Vetox 85" have been distributed in Bichi, Kazaure, Dambatta, Gumel, Hadejia and Jahun. Spraying equipment for the chemical have also been distributed to farmers, he added.

More than 25,000 kilograms of chemical powder called "Syuexa" (BHC - 25% Dust) have also been sent out to farmers, he added.

Malam Abdul Azeez explained that the "Syuexa" powder has advantage over "Vetox 85" because whereas the latter was applied with spraying machines, the former was applicable by a simple process of mixing the powder and sand in prescribed quantities and throwing the compound over the affected areas.

To control the spread of the voracious locusts, Malam Abdul Azeez said that emphasis was placed on what he described as "natural controls" such as digging of trenches to bury the grasshoppers. He appealed to farmers to report immediately any outbreak.

Commenting on campaign measures now being taken to contain the situation, Malam Abdul Azeez said that radio and television media were now being utilised to inform the public and to get them prepared for the outbreak of the grasshoppers.

# WATER MONITORING SYSTEM PIONEERED IN NORTHERN DONETS RIVER

Kiev RABOCHAYA GAZETA in Russian 12 May 78 p 4

[Article by V. Deshko, correspondent: "Pearl of the Donbass: Adding Luster"]

[Text] The USSR's first automated system for monitoring river water quality is looming up on the Northern Donets River.

The Northern Donets River is the pearl of the Donbass. Tranquilly, it courses through forests and farmfields, sustaining with life-giving water city-dwellers, industrial enterprises and farms. Summers, magnetlike, the river attracts thousands of nature-lovers and people on holidays.

From the Northern Donets we remove pure water, but we do not always return it to the river just as limpidly. Therefore, on meeting the chief of the State Water Inspection Board of the North Donets Basin, V. Antonenko, we asked him to tell us about measures to prevent sullyng the river's beauty.

"The water balance of the Northern Donets," Victor Yegorovich said, "has long concerned both the Ministry of Water Management and various departments and the public at large. Take just the 100-kilometer-long stretch of the river where there are concentrated enterprises of the Slavyansk Khimprom Production Association, of the Rubezhansk Krasitel' Production Association and of the Severodonetsk Azot Production Association and the Lisichansk Soda Plant. They are the prime users of water for industrial needs. Untreated wastewater is often dumped along this stretch of the river.

"Under construction are treatment plants; water-use recycling systems are going on-line. Personnel from the water inspection board and "blue patrol" activists are doing a lot. They are concerned with keeping harmful substances entering the Northern Donets to a minimum. But all these are only halfway measures.



"To radically clear up the problem, in 1972 the plans for a unified system began to be developed, for automated monitoring of flow volume and devices regulating the quality of Northern Donets water. The undertaking was taken in tow by personnel at the Khar'kov VNIIVO [All-Union Research Institute of Water Conservation]: V. Lozanskiy is its director.

"When they learned that the first automated control system for regulating river water quality was being built, the American side of the Mixed Soviet-American Commission for Cooperation in Environmental Protection expressed a desire to take part in this effort. The proposal of the United States scientists was accepted. They set out to investigate in their country a corresponding body of water by methods agreed on in advance. Soviet and American scientists are continually exchanging materials from their investigations, instruments for monitoring water quality and individual developments.

"Construction of the pilot-plant automated system for controlling the reservoir complex (ASU VK) on the Northern Donets River was already determined. General builder is the Khar'kov VNIIVO Institute; the designer is the planning and technological office of this institute; general contractor is the Voroshilovgradvodstroy Trust.

"Just what is the ASU VK Chisty Donets? The system is made up of eight river water monitoring stations, six Naya type wastewater monitoring stations; manufactured in Czechoslovakia, five local dispatcher stations and one central dispatcher station covering the stretch about 100 kilometers long from Slavyansk in Donetskaya Oblast to Svetlichnyy settlement in Voroshilovgradskaya Oblast.

"Water is sampled each half hour. The automatic devices determine water temperature, electroconductivity, transparency and chemical content. These data are fed to a computer and will be stored in its memory one day for comparison and will be transmitted in parallel to the local and central dispatcher stations for analysis and decision-making. Regulation of the wastewater volume flow is to take place from three storage tanks and one reservoir.

"Stations and laboratories, dispatcher stations and storage tanks are already under construction for the commissioning of the ASU VK. The cost of the first stage is 3.9 million rubles. The ASU is scheduled to start up this year.

"To be sure, the economic benefit from introducing the automated system of the reservoir complex is important as well. Preliminary calculations revealed that the expenditures will be recovered in 6.5 years. But the main point is that the ASU VK will mean, even in its first few years of operation, that the route of harmful discharges to the Northern Donets will be blocked, the most favorable conditions will be provided for the life of its inhabitants and that pure and palatable water will be delivered to cities and other inhabited locations in the lower reaches of the river.

"In the future, drawing on the experience in building and operating the ASU VK on the Northern Donets River, systems like this one will also take shape in the basins of other rivers of the Ukraine and the entire country."

# JOINT COMMISSION SESSION IN KREMLIN APPRAISES ENVIRONMENTAL PROTECTION

Kiev RABOCHAYA GAZETA in Russian 12 May 78 p 1

[Article: "Caring About the Environment"]

[Text] Protection of the environment and the optimal use of natural resources has always been a concern of the Communist Party of the Soviet Union and the Soviet government. Legislative and other normative documents clearly spelled out the tasks of ministries, departments, enterprises and organizations in preventing pollution of atmospheric air, soil and inland waters and in the integrated utilization of natural resources.

On 11 May the question "On Observance of the Requirements of Legislation on Conservation of Nature by Enterprises of the USSR Ministry of Power Engineering and Electrification" was examined at a joint session of the commissions on environmental protection of the Soviet Union, and the Soviet of Nationalities of the USSR Supreme Soviet.

Reports and speeches by deputies stated that in recent years efficient dust collectors have gone into service at newly built power stations; obsolete dust collectors were modernized at numerous stations. A large number of obsolete equipment was replaced. This helped reduce ash discharges into the atmosphere. Studies of methods of lowering effluvia of oxides of nitrogen are underway at existing power stations. Power stations built in the past few years are equipped with new systems for wastewater treatment and by and large the stations have been redesigned. A considerable volume of work was done in protecting the basins of the Black, Azov and Baltic seas and the Volga, Urals and Tom' rivers. Sixty-six water-protection facilities with a treatment capacity of about 50 million cubic meters a year were introduced in these basins.

Even so, serious failings were noted in the ministry and its organizations in compliance with the requirements in laws on protection of the environment. The resolution adopted contains recommendations to ministries and departments aimed at compliance with the requirements in laws on protection of the environment. Stressed is the need to stiffen monitoring of the operation and construction of treatment plants and dust and gas trapping units, and monitoring of compliance by power engineering enterprises with land-use laws and land use procedures.

Taking part in the session was A. S. Barkauskas, Vice-Chairman, Presidium of the USSR Supreme Soviet, and A. P. Shitikov, Chairman of the Soviet of the Union of the USSR Supreme Soviet.

USSR

LENINGRAD INSTITUTE'S LIDARS SAMPLE CITY POLLUTION IN 1976

Tallin SOVETSKAYA ESTONIYA in Russian 31 Mar 78 p 2

[Article by A. Melua, group director in the Leningrad NIIP gradostroitel'stva: "How to Measure Air Quality"]

[Text] The article "You Can't Get by Without Science" published in SOVETSKAYA ESTONIYA on 7 June 1977 touched on a problem that is very urgent for present-day cities: methods and instrumentation for analysis of city air quality. Actually, sources of discharges into the atmosphere at times happen to be located inside residential areas for different subjective and objective reasons. In the decade ahead modern science will not be able to ensure waste-free industrial production. The noxious effect of transportation on air quality will also intensify.

These facts and others show that we will also face dealing with the problem of air quality in the future. But the effectiveness of measures to upgrade air quality depends on the responsiveness and objectiveness of available starting information. Here then is the problem--information collection--that is the first problem lying on the other side of the barrier dividing the "administrative" from the "scientific" in the air quality problem.

The air quality sanitary monitoring service is in the cities. Its activity is given assistance also by the Hydrometeorological Service and individual departmental stations. All collectors of this information in the country share one thing in common--the "contact principle" of the analytical methods. In other words, air quality is measured only at the point where the instrument is located. Naturally, more complete information on the condition of the air quality of an entire city requires measurements taken at hundreds, or even thousands of points. Several dozens of stations present in a city, in fact, are incapable of making them. In this light, we can understand the developers of complex air quality data collecting systems aimed at shifting most of these studies to automatic sensors.

Contact methods cannot be entirely rejected. They faultlessly perform their functions, in particular, if the analysis involves small volumes. But even so, remote sensing methods must be introduced to collect integrated reliable information about the air in an entire city.

Laser ranging is a remote sensing method. Laser ranging units (lidars) utilize the scattering of laser radiation by pollution components. The sensitive equipment, by analyzing the received part of the scattered radiation, determines the qualitative and quantitative characteristics of pollution at just about any distance from the lidar.

The first analysis of air over a large city using lidars was done in 1976 by the Leningrad NIIP gradostroitel'stvo. Similar experiments, but bigger in scale, were performed in September 1977 by the Leningrad institute. Aerosol propagation was investigated, but even so this method permits study also of the distribution of molecular constituents of pollution.

In the Leningrad experiment, data on 30,000 air basin points, 50-150 meters apart, were collected over a 26-hr period from three support stations. This coverage would require 8000 hr by the contact methods (even if we assume that an instrument can be placed at any point). Dust concentration was recorded to a precision of  $10^{-6}$  mg/m<sup>3</sup>. Therefore, the remote sensing method has evident advantages.

Lidars make possible more frequent measurements with a modest number of personnel. A preliminary design of a system of lidar stations in a city was drawn up; aided by a high-performance computer, the system will turn out planar pollution distribution patterns for any cross-section. To be sure, one-time costs for building these stations are quite high (a lidar costs 80,000-150,000 rubles), so they can be built only in the biggest cities. But a mobile lidar station, now under development in Leningrad, will be capable of tackling these challenges in any city.

The findings of laser ranging laid the scientific foundations for performing the following tasks: mapping pollution in an air basin and its statistical interpretation; justification for laying out sanitary-protective zones; justification of the priority in moving industrial enterprises outside city limits, and other tasks.

Well, then, when we talk about the outlook for scientific studies on air quality, we can arguably state: the future is on the side of remote sensing methods, while retaining ties with contact methods. Experimental findings unequivocally bear this out. Remote sensing methods entail the devising of new equipment and methods of carrying out and applying investigations. Even now, this is an interdisciplinary trend. For the most optimal solution to this problem, sanitary physicians, city planners, cyberneticists, optical engineers and other specialists must unify their efforts.

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## ENVIRONMENTAL PROTECTION CONVENTION SIGNED

Moscow IZVESTIYA in Russian 30 May 78 p 1

[Editorial: "Preserve the Beauty of the Land"]

[Text] In May of this year, the Presidium of the USSR Supreme Soviet ratified the Convention on prohibiting abuse of the environment by military or other harmful means. This convention expresses, as if in concentrated form, one of the major tasks of our time--to preserve our land; the planet and the people; in all its beauty and diversity, so that it will serve the people for years to come.

At all stages of development of the Soviet state conservation of nature has been and remains one of its chief concerns. Just in the first years of Soviet rule, Vladimir Il'ich Lenin signed more than 100 documents directed at protection of the environment and rational utilization of natural resources. Solution of the problems of nature conservation is closely connected with successful fulfillment of the national economic plans, with further improvement in the welfare of the people, with concern about the health of the population, and with providing for the Soviet people the necessary conditions for fruitful labor and leisure. Rational utilization and reproduction of natural resources, and a thrifty attitude toward nature are an integral part of the program of communist construction.

Our relation to nature today has been clearly defined by comrade L.I. Brezhnev: "In taking measures to accelerate scientific and technical progress, it is necessary to do everything so that it is combined with a proprietary attitude toward natural resources, so that it will not serve as a source of dangerous pollution of the air and the water, of exhaustion of the land... Not only we, but subsequent generations as well should have the opportunity to enjoy all the good things given by the beautiful nature of our homeland."

Namely this concern about the future, about those who will take from us the baton of communist creation, has permeated all the chapters and articles of the many legislative acts adopted recently by the USSR Supreme Soviet. Among these are the Fundamentals of Land Legislation of the USSR and the Union Republics, and legislation about water, the forests and minerals. The draft of each of these normative documents was submitted for nationwide discussion, and after scores of suggestions from workers were considered they were adopted by the USSR Supreme Soviet.

The extensive work for monitoring the observance of existing Soviet legislation on environmental protection and rational use of natural resources is performed by the standing commissions for nature conservation of the Soviet of the Union and the Soviet of Nationalities of the USSR Supreme Soviet, formed following a proposal by the Councils of Elders in July 1970. The proposal was substantiated when in recent years the tendencies of industrial development and their effect on the natural environment showed clearly that in the activity of the Supreme Soviet the given problems require constant attention and in-depth study and that control over the executive agencies in this respect should be regular in character. Such control is also implemented by the standing commissions for nature conservation of the chambers of the USSR Supreme Soviet. Thus, at a joint session of these commissions which took place in May of this year, the deputies considered the question of "Observance of the Requirements of Legislation on Nature Conservation by Enterprises of the USSR Ministry of Power Engineering and Electrification."

The kind of significance given in the USSR to problems of environmental protection is shown also by the fact that a special section on nature conservation has been included in the annual and long-range state plans of the economic and social development of our country since 1975.

In 1978 according to the plan it is intended to put into operation sewage purification plants with a capacity of 6.4 million cubic meters per day, and high-capacity return water-supply systems. Water conservation construction will be carried out in the basins of the Black Sea, the Sea of Azov, the Baltic and the Caspian, and also in a number of river basins. It is planned to introduce new technological processes and purification equipment significantly reducing the discharge of harmful substances into the atmosphere.

This year 2 billion rubles of state capital investments will be set aside for the USSR national economy as a whole for the conduct of measures for nature conservation and rational use of natural resources.

It is the duty of every citizen of the USSR to preserve nature, to protect its resources. This is written in the country's Constitution. So in its activity regarding conservation of nature our state depends on the initiative, the enthusiasm and assistance of millions of Soviet people--

members of republic "Nature Conservation" societies, participants in "green" and "blue" patrols, in the service of protection of the forests and rivers of the homeland. When summing up the results of socialist competition for organization of public amenities between the cities and the villages, which is conducted in all the union republics, special attention is directed to the measures for nature conservation.

Yes, in our country nature is under the protection of the law. But we are not alone on the planet. So, as was noted by comrade L. I. Brezhnev in his speech at the sessions of the USSR Supreme Soviet, nature conservation requires the efforts of all people populating the globe. A wound inflicted on nature on one continent cannot pass unnoticed on another. This is the more so if this wound is inflicted consciously, with malicious intent. The possibilities for this, unfortunately, will increase, especially if the advances of science are utilized to the detriment of people.

The convention on banning military or any other harmful use of means of acting on the environment, which was signed on behalf of the Soviet Union a year ago in Geneva and has now been ratified by the Presidium of the USSR Supreme Soviet, touches all states. It confirms the right of each nation to live on the earth in peace, it strengthens the hope that not only we, but also our grandchildren and great-grandchildren will be able to enjoy the benefits of nature--the natural foundation of the life of every person.

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## POLLUTION CONTROL EQUIPMENT

Moscow EKONOMICHESKAYA GAZETA in Russian No 18, Apr 78 p 17

[Article by Yu. Krovitskiy, assistant head of administration for gas-purification of Minkhimmash: "In the Long-Range Program"]

[Text] The production of equipment to protect the atmosphere from pollution by industrial discharges is mainly concentrated at the enterprises of the administration for the development and production of gas-purifying and dust-collecting equipment of the Minkhimmash [Ministry of Chemical Machinery]. In the past 5 years the output of such equipment has increased by more than 2.5-fold. As a result the needs of the reconstructed industrial facilities for units for dust and gas purification are currently being completely satisfied.

One of the main tasks of the gas-purification administration is the creation and assimilation of new and more efficient equipment and apparatus for purifying industrial discharges into the atmosphere.

Two years ago the State Scientific Research Institute for Gas Purification in Industry and Sanitation (NII Ogaz) jointly with the design institute "Giprogazoochistka" developed reference materials on the gas purification processes in the main branches of industry which made it possible to compile a long-range program for the creation of complete gas and dust-collecting equipment.

Already production has been developed for the new apparatus for electrical purification of gases--a whole family of standardized horizontal, vertical and miniature filters. Preparation is ending for the extensive introduction of the electrical filter with planar electrodes for the purification of high-temperature gases. All of them make it possible to significantly increase the degree of gas purification. In addition rolled metal is saved, and less electrical power is required for the operation of the electrical filters.

In addition to the standardized filters a number of special ones have been made, such as titanium (for the production of sulfuric acid), stainless steel (for certain chemical productions), filters for soda-regenerating boilers in the paper and pulp industry, and so forth.



Considerable work is being conducted for the creation of cloth filter bags. They have a number of advantages over the electrical, and in the future they must become the most widespread. Series production has already begun of the filter bags with throughput from 2000 to 120,000 cubic meters of purifiable gas per hour. The throughput of certain type-sizes is up to 2 million cubic meters of gas per hour.

Development is also continuing of other types of dust-collecting and gas-purifying equipment. Standardization has been conducted, and series production is beginning of improved battery dust extractors. The first models of grain filters are being tested.

Of great importance is the development of thermocatalytic reactors--equipment for combatting harmful substances by the method of thermocatalytic oxidation. The first batch of reactors has been given to the industrial enterprises for testing.

Series production has begun of fibrous fog-catchers for purification of suction discharges from electroplating baths. This equipment is in great demand by the industrial enterprises.

The work done by the administration for increasing the nomenclature of equipment made it possible to expand the number of its type-sizes from 57 in 1975 to 135 this year.

An important role in the protection of the air basin from discharges belongs to the State Inspection for Control of the Operation of Gas-Purifying and Dust-Collecting Units which has been created within our ministry. Fifty-nine regional inspections have been set up which encompass all the industrial regions of the country.

The State Inspection has completed comprehensive examination of the industrial enterprises in 120 cities, where the greatest amount of substance is discharged into the atmosphere. At 7,500 industrial enterprises the work of almost 100,000 gas-purifying and dust-collecting units has been checked.

According to the results of the checks the enterprises are being given recommendations for improving the maintenance and operation of the gas-purifying units. Generalized materials of the checks are regularly sent to the ministries and departments. The measures taken by the enterprises to improve the operation of units permitted reduction of dust discharge into the atmosphere by 15% without additional capital investments.

I would like to state that the output of new and highly efficient equipment for dust and gas purification is being restrained.

Often the customers prolong the testing of pilot samples of new equipment. As far back as 1974 a UGTS type electrical filter was delivered to the Sredne-Ural'sk copper-smelting plant, however as yet it has not been used. The pilot

samples of the UGM electrical filters have not been installed for 2 years at the Kursk gypsum plant and the Pereslavskiy chemical plant. A new design of gravel filter was delivered to the Savino cement plant 3 years ago, but is also idle.

We are waiting for greater attention to the output of the necessary quantity of synthetic fibers and filter cloths made of them on the part of the workers of the chemical and textile industry.

Control of discharge requires a whole number of instruments, in particular, an automatic instrument to measure the optic density of flue gases, and automatic gas analyzers to measure the concentration of oxides of nitrogen and hydrogen sulfide. However, the Minpribor is prolonging their development and assimilation. And the development of the gas-preparing devices, without which it is impossible to use the indicated instruments, has not yet been started. This will slow down the transition to control of discharges according to the maximum permissible norms.

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'POST-1' MONITORS ENVIRONMENT

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 2 Mar 78 p 4

[Article by A. Lupenko: "Automatic Machines Guarding Nature"]

[Text] This year in Moscow construction will begin of the Center for Collecting and Processing Information on the State of the Environment in the City. The electronic facilities of the Center will be directly linked to the stationary and mobile laboratories. A computer will collect all the data on the condition of the air, will process them, and distribute them to the consumers in a form convenient for them. With the help of these data it will be possible to compile a unique map of atmospheric purity in the city which will assist in more accurate planning and distribution of the increasing transportation traffic, designing of rest areas, placement of new industrial enterprises...

Near the lively highways of the capital an attentive glance can notice small silvery colors of boxes with doors and a vane on top. Why are they needed? These boxes are called "posts." A laboratory is within each of them. Several instruments automatically determine the content of sulfurous anhydride and carbon monoxide in the atmosphere, and sensitively detect the slightest changes in the chemical composition of the air. Three times a day the "posts" are visited by the specialist who takes from the automatic recorders the tapes with the instrument readings. The information enters the Central High-Altitude Hydrometeorological Observatory where it is processed, analyzed, and if the level of atmospheric pollution is above the standard, emergency administrative measures are taken.

The "posts" are units of the future automated system of observation and control over the state of the environment and purity of the atmosphere--ANKOS-A (atmosphere). Besides the stationary laboratories, the first mobile laboratories of the type "Atmosfera" have been created for analysis of atmospheric pollution in the zones of industry and on major highways. These laboratories can be used by the municipal and oblast sanitary and epidemiological stations...

Control of water purity is largely similar to the work of atmospheric observation. Resources have been created for controlling the state of the "surface waters." Instruments have been developed and are being produced in series which determine the content of metals in the water, the density of silt, and the concentration of toxic admixtures. But the most important is that a set of apparatus has been created and is being introduced into practice which is united into the automatic system ANKOS-V (water). The test phase of this system which includes several stations automatically transmits control data to the center for information processing...

"According to the automated systems of ANKOS-A and ANKOS-V our ministry jointly with the Glavgidrometsluzhba [Main Administration of the Hydro-meteorological Service] and other organizations have formulated a large program for the future," relates the assistant head of the scientific and technical administration of the USSR Minpribor [Ministry of Instruments] V. Orlov. "According to the results of the work of the first test systems standard ones will be created. In them with the help of computer the state of the water and air basins will be automatically analyzed, and the data will enter the computer center of the city. In the future systems will be created on the scale of the union republics and the entire country.

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USSR

## ARKHANGEL'SK AIR POLLUTION

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 28 Apr 78 p 2

[Article by A. Mironov: "The Air Will Become Cleaner"]

[Text] At the Arkhangel'sk paper and pulp kombinat starting tests have been conducted of the country's first experimental industrial unit for catalytic combustion of gas discharges of digesters.

Colleagues of the Siberian section of the USSR Academy of Sciences and the Leningrad Technical Institute of the Paper and Pulp Industry have set the goal of testing the selection of the optimal pattern for purifying gas discharges and checking the stability of the catalyzer under conditions of oxidation of large volumes of sulfurous compounds.

The unit, made according to the drawings of the designers of the Arkhangel'sk TsBK [paper and pulp kombinat] in the repair and mechanical shop, operated for about 20 hours on different patterns. According to the results of analyses which are now being processed the pattern of catalysis is being determined.

Chemical control indicated that the sulfur-containing substances are subject to oxidation, and their concentration in the discharges after combustion is significantly reduced. Theoretical calculations of the scientists were confirmed, but deficiencies in the scheme were also revealed. Now the authors are involved in a study of the catalyzer lately in operation. After this a final answer will be obtained to the question of the future of the proposed method of gas purification.

The tests on the catalytic combustion unit that have been made at the Arkhangel'sk TsBK are only the beginning of considerable and complicated work on purification of gas discharges in the paper and pulp industry. Its final goal is the creation of shops for collecting and reprocessing gases discharged into the atmosphere, and the development of a closed system which is capable of completely preventing harmful substances from entering the environment.

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USSR

## RESPONSIBILITY FOR SEA POLLUTION

Moscow VODNIY TRANSPORT in Russian 22 Apr 78 p 3

[Article from TASS: "Material Responsibility for Sea Pollution"]

[Text] In the USSR legislation, and in particular in the Ukase of the Presidium of the USSR Supreme Soviet of 26 February 1974, strict measures are provided for responsibility for sea pollution by substances harmful to human health, or for living resources of the sea. Individuals guilty of these violations of the law can be sued with the application of such punishment measures as loss of freedom, corrective work, or fines.

In addition to the prevailing legislation the USSR Council of Ministers has adopted a decree on the question of the order of compensating for material damage to the state by sea pollution.

According to this decree the organs for regulating the use and for protection of waters have been given the right to sue state enterprises, organizations, and institutions, kolkhozes and other cooperative and public organizations, and citizens of the USSR, as well as foreign physical and judicial individuals for fines in state income to compensate for damage caused by pollution of internal seas and territorial waters of the USSR. Damage must be compensated for which is caused as a consequence of the illegal disposal into these waters from ships and other floating vessels, or from not taking the necessary measures to prevent losses by them of substances harmful to human health or to the living resources of the sea, or of mixtures containing such substances above the established norms. The technique for calculating the indicated damage is determined by the USSR Ministry of Land Reclamation and Water Resources with the USSR Ministry of Finance, and other interested organizations.

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CSO: 5000

USSR

PROFESSION: ENGINEER-ECOLOGIST

Kiev RABOCHAYA GAZETA in Russian 23 May 78 p 1

[Text] Minsk. Students of the country's first faculty of environmental protection, which was established at the Belorussian University imeni V.I. Lenin, have taken their last exam. Engineers with diplomas, who are heads of shops and departments of enterprises and design organizations, are studying here.

For six months, biologists, lawyers, geologists, philosophers and mathematicians from institutes of the Belorussian Academy of Sciences and higher educational institutions of Minsk instructed them. Subjects of diploma projects took into account the basic specialty of each engineer-ecologist, and concrete tasks of protecting the biosphere that they will encounter during production.

Such training of engineers is provided for by the broad program of environmental sanitation that is being carried out in the republic. It includes the widespread introduction of recycling water supply systems and waste-free technologies, and the development of effective methods of purifying industrial wastes.

CSO; 5000

USSR

BRIEFS

REVERSAL OF EMAYYGI RIVER--The largest river in Estonia, the Emayygi has reversed itself. Due to a strong flood tide part of the water flowed in the opposite direction--as occurs after snowy winters. This unusual phenomenon was observed by the residents of the neighboring villages. The river flows down a small slope from Lake Vyrts"yarv into Lake Chudskoye. Soon the flood tide will end, and the Emayygi will carry its water along the normal path. [Text] [Moscow VODNYI TRANSPORT in Russian 22 Apr 78 p 4] 9035

CSO: 5000



BRIEFS

MERCURY IN FISH--Fish caught in the North Sea and ending up on our dinner tables contain mercury originating in West German industry. This is shown by studies undertaken by the State Food Institute Isop Center. The study is described by Academy Engineer Knud Pedersen in the latest issue of the journal INGENIOREN. The studies show that fish caught along the west coast of Jutland contain five times as much mercury as fish previously caught in the Kattegat and the Baltic. Knud Pedersen hints that there is a connection between this and the fact that from the Rhine alone 100 tons of mercury are dumped into the North Sea annually. Many things indicate that mercury and other substances are not broken down when diffused, but are carried on ocean currents to certain localities, poisoning the fish stock. Knud Pedersen proposes an investigation of the amount of mercury found in fish caught in coastal waters from the Channel in the south to Skagen in the north. The total fish stock in the North Sea is estimated at 9 million tons, of which one third is used for human food. Food considerations can therefore come into conflict with the role of the North Sea as a dumping ground for waste products from industry on land. [Text] [Copenhagen BERLINGSKE TIDENDE in Danish 28 Apr 78 p 2] 11256

CSO: 5200

## GREECE

### SERIOUS POLLUTION FROM CARS IN SALONICA

Athens TA NEA in Greek 9 May 78 pp 1, 13

[Text] Salonica, 9 May--The increased number of cars is causing severe carbon monoxide pollution in Salonica, creating a variety of health problems.

This is the result of pollution tests conducted by the Health Laboratory of the Salonica University Medical School in five thoroughfares of the city, specifically Tsimiski, Agias Sofias, Them. Sofouli, Mitropoleos and Agiou Dimitriou Avenues.

The tests showed that high concentrations of carbon monoxide were prevalent in many spots, which were due notably to the large number of cars, but also to poor city planning and environmental conditions.

#### Preventive Measures Needed

The above data were made public at the Fourth Panhellenic Medical Congress; the report also stresses that because of the rapid increase in the number of cars (it is estimated there are 125,000 vehicles in circulation today, to which must be added 80,000 more in through traffic, while approximately 1,500 new car registrations are added monthly), the problem will become much worse and measures should be taken immediately to ensure the enactment of various ordinances, a more rational movement in traffic patterns and the removal of children's centers from the worst hit locations in the city.

In other words, schools, preparatory schools, etc. must be removed from those streets that carry the heaviest traffic, because carbon monoxide pollution adversely affects the children's health.

#### Pollution Worse in Narrower Streets

Marked differences in pollution levels are found in the five locations, according to the report prepared by Th. Eidipidis and Dim. Vlakhos.

Accordingly, the concentration of carbon monoxide is much higher in Mitropoleos Street, a narrow thoroughfare which does not lead down to the

sea, and markedly lower in Themistokli Sofouli Street, where traffic is lighter, the roadway wider and the houses are lower.

The Health Laboratory is also studying the periodic pollution of the Thermaikos Gulf and it notes, following several samplings, that the pollution is mainly due to the untreated waste and sewerage from the city of Salonica.

In Salamina

Deputy I. Khatzis (EDIK [Democratic Center Union]) has made a series of inquiries about the problems in Salamina; he especially emphasizes the disturbing rise in environmental pollution as a result of the pollution of the island's coastal waters from industries, chemical wastes, ships at anchor and drydocks.

8980

CSO: 5000

## GREECE

### POLLUTION IN PATRA HARBOR REPORTED

Athens I AVGI in Greek 29 Apr 78 p 1

[Text] Patra--The Patra harbor is in danger of being turned into a sewer. This is the conclusion reached by the Department of Social Services following a chemical test of the sea waters.

A report about this problem notes that the area of the sea between Agios Andreas and Terpsithea measuring 3.5 kms in length, is highly polluted, making swimming and fishing hazardous.

Specifically, the report stresses that bacteria are rife in the water, creating cause for concern.

The first signs of pollution in the harbor appeared some years ago, simultaneously with the building boom in Patra and the uncontrolled establishment of various industries in the inhabited areas of the coast line.

Specifically, the report points out that the [as published] of Patra discharges into the sea all sorts of effluents, from dirty water to oil and fuel oil. All the industries unconcernedly discharge their wastes directly into the sea without the benefit of previous treatment. Pollution is especially heavy south of the city in Ities, where most of the industries are located. Such highly polluting industries are the Peiraiki-Patraiki, the Ladopoulos paper mill, the Transtecom, the Veso, the Kritikou factory, the tanneries, etc.

The wastes from the above industries--most of which contain carcinogenous substances--constitute the basic cause of pollution, because they threaten marine life and produce an unbearable stench.

Besides the reasons mentioned above, however, we must point out two more, to which the present horrifying situation is partly due.

Following the enlargement of the port area, the breakwater was extended, thus blocking out the water to a certain extent. As a result, the basin of the port was reduced, as was also the area for the ebb and flow of the seawater. This modification, in turn, prevented the easy renewal of the water in the port basin, with all the wastes remaining almost stagnant.

GREECE

OIL SLICK THREATENS THERMAIKOS SHORES

Athens I AVGI in Greek 7 May 78 p 1

[Text] Salonica, 6 May--A large oil slick is directly threatening the shoreline from Khalkidiki to Katerini, while an investigation has already been ordered to determine the origin of the oil spill.

The Ministry of Merchant Marine and the port authorities of the three Nomes have already been alerted.

From the data gathered so far, it appears that the oil leaked into the sea from the tanker "Khatzikyriakos," which left Salonica for Volos.

The oil slick, which was discovered by an Air Force plane, is now in the waters off Potidaia of Khalkidiki and covers an area measuring approximately 140,000 square meters. It is long and narrow, measuring 2 kms in length, and it is 70 meters wide.

It is believed that the quantity of oil that leaked out is not significant, because the spill, which is now being carried toward the Thermaikos Gulf, is not deep. However, it has proved impossible to fight it because of its extent.

Competent authorities are expressing fears that the slick will reach the shoreline and cause extensive pollution.

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CSO: 5000

## GREECE

### BRIEFS

TREMOR IN CENTRAL GREECE--A tremor measuring 5 degrees on the Richter scale occurred yesterday at 1130 in Central Greece. The epicenter of the quake was 150 kms north of Athens. The tremor was felt in Patra, Agrinion, Giannena, Karditsa, Larisa, Nafpaktos and Lamia. The quake only caused some cracks in 12 older buildings in the village of Pavlopoulos of Evrytania. [Text] [Athens I AVGI in Greek 29 Apr 78 p 8] 8980

STRONG TREMOR IN SALONICA--Salonica, 8 May--A strong but brief tremor shook Salonica yesterday at 1800 hours (?). The tremor was felt in the higher floors of the apartment houses lining the sea front, while residents of apartment buildings beyond Egnatia Street did not notice it. A series of lesser shocks followed after a few minutes. [Text] [Athens I AVGI in Greek 9 May 78 p 7] 8980

CSO: 5000

SWEDEN

## ENVIRONMENT AGENCY DEMANDS CHEMICAL DUMPING IN HARBORS HALTED

Stockholm DAGENS NYHETER in Swedish 20 May 78 p 5

[Article by Anders Ohman: "200,000 Tons Dangerous Poisons Dumped in Sweden Each Year"]

[Text] Vessels discharge more than 200,000 tons of the most poisonous chemicals each year in 12 Swedish harbors. Most of the poisons end up in Landskrona, which receives 94,000 tons of ammonia. More than 40,000 tons of mixed poisonous chemicals are discharged in Goteborg.

These figures are based on an investigation by the Environment Agency, which demands that facilities be built in all these harbors to handle the chemicals that are left over in the vessels after unloading.

These vessels are now forced to secretly dump the poisonous ballast water in the ocean which seriously harms marine life.

The 12 Swedish harbors are Goteborg, Holmsund, Helsingfors, Landskrona, Oskarshamn, Otterbacken (Vanern), Stenungsund, Stockvik, Sodertalje, Varberg, (Vanern) and Ornskoldsvik.

Only one or a few kinds of poisonous chemicals are discharged in most of the harbors. Only Goteborg and Stenungsund get several kinds of poisonous chemicals.

### 14 of 230 Poisons Graded

The Environment Agency's survey of poisonous transports initially includes 14 out of 230 most poisonous chemicals, which are transported in bulk by specially built vessels. These 14 chemicals are graded A and B substances.

Six of the poisons are graded A: coal disulfide, creosote, naphtha acid, tetraethyl lead, tetramethyl lead and acrolein.

Among the B poisons are acrollynitrite, ammonia, butyraldehyde, ethylene dicloride, phenol, flurosilicone acid, chloroform and tolidine diozinium.

The chemical industry uses these poisonous substances in the manufacture of dyes, waterproofing agents, fertilizers, adhesives, glue, lead additives in gasoline etc.

#### Ocean Transports Mapped First

"To begin with we have concentrated our efforts on surveying ocean transports which carry the most poisonous chemicals, but we will continue with the other substances, even those that are not transported in bulk, outside of packaged goods. When we get a picture of the poisonous transports that come into Sweden we can also better decide whether these transports should be allowed to travel the most sensitive waterways into the different Swedish ports," Sten Olof Hellgren with the Environment Agency tells DAGENS NYHETER.

The waterway from Landsort to Sodertalje, of current interest in connection with the oil mishap last fall when the Russian tanker "Tsesis" went aground near Fifang, is one of the routes used by the poison-carrying vessels. In 1977 these vessels unloaded 2,220 tons of phenol, a B poison.

The Environment Agency's survey of A and B poison transports is primarily aimed at getting suitable facilities built in the ports to handle the poisonous chemicals that remain in the vessels after they finish unloading.

A and B poisonous substances are mostly carried by vessels ranging from 300 to 1,500 tons. After unloading there is always poisonous residue left in the tanks, which is mixed with water when they fill the ballast.

#### Dumping in the Baltic?

"We cannot say exactly where this poisonous water is being dumped in the Baltic or in the North Sea, but it has to take place somewhere before the vessels are loaded again. For this reason we must control even poisonous residues and unfortunately, we lack effective receiving arrangements in Swedish ports today. I am not taking into account that the poisonous water can be unloaded onto tank trucks and transported to proper destruction facilities. Furthermore, this arrangement is not economical when we are dealing with 500 tons of poisonous water," Sten Olof Hellgren tells DAGENS NYHETER.



According to the Baltic Convention in 1973, the A poisons are so dangerous that they constitute a serious threat to marine life and human health if they are dumped in the sea when cleaning the tankers or emptying ballast tanks.

The B poisons are somewhat less dangerous.

The Environment Agency will be working with the Navigation Agency and industrial representatives to provide a detailed survey of the poisonous transports coming into Sweden.

Receiving facilities that can handle poisonous residues on ships are expected to be built in Swedish ports by 1980.

#### Poison's Properties

The A and B poisons have the following appearance and properties:

Coal disulfide. Colorless liquid with a strong odor. Vaporizes quickly and builds an explosive mixture, heavier than air. Relatively insoluble in water, sinks to the bottom.

Creosote. Black, oily, slow-flowing liquid that can be found in water-proofing agents.

Naphtha acid. Black, oily liquid, contains phenol and sulphur impurities. Can be found in lubricants and preserving agents etc.

Tetraethyl lead and tetramethyl lead. Used as anti-knock derivatives in gasoline. Tetramethyl lead sinks to the bottom when it is mixed with water.

Acrylonitrile. Used to eradicate pests, in adhesives, fertilizers, etc. Combustible and explosive, floats on top when mixed with water.

Ammonia. Basic raw material in non-organic fertilizers. Water-soluble liquid with a sharp, stinging odor. Explosive.

Butyraldehyde. Colorless liquid with a bad odor, gives off explosive vapors. Oxidizes to an oily acid in air. Corrosive and slowly soluble in water.

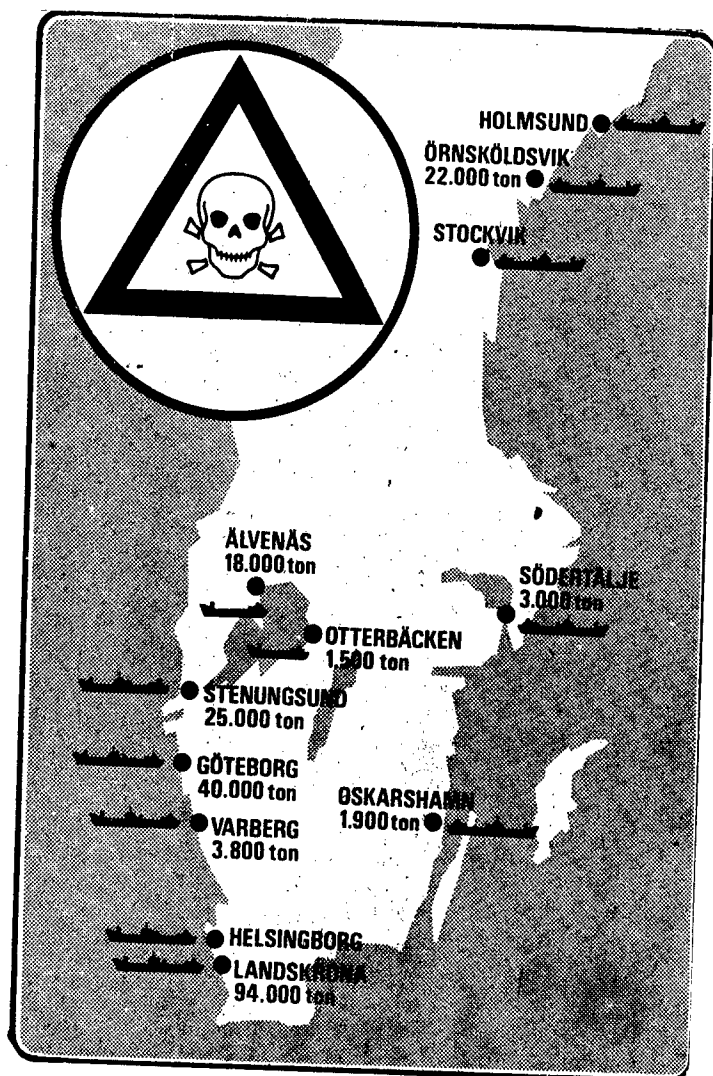
Phenol. Can be found in glue. Forms needle-like crystals or melts with a sweet odor. Heavier than water. Poisonous in low concentrations.

Fluorosilicone acid. Colorless, fuming, water-soluble and with a sharp odor. Separates when heated and gives off poisonous vapors.

Chloroform. Colorless liquid with a strong, sweet odor. At high temperature it gives off a poisonous chlorine and chlorine hydrogen gas.

Ethylene dicloride. Colorless, oily-like liquid, smells like chloroform. Gives off an inflammable vapor. Heavier than water and sinks to the bottom.

Tolidine diozinium. Pale yellow liquid or solid substance with a penetrating odor. When heated to high temperatures, it forms explosive gases and when ignited, forms poisonous gases containing nitrate and isocyanine. Heavier than water and sinks to the bottom when mixed.



#### Poisons Brought Here

Goteborg. More than 40,000 tons A and B poisons discharged every year. 100 tons naphtha acid, which is used in dyes. 1,200 tons tetraethyl lead. 1,200 tons tetramethyl lead. Recipients are the oil companies OK, Nynas and Shell Koppar. 10,000 tons butyraldehyde received by state-owned Beroline Industries. 14,000 tons phenol (20,000 tons in 1978). Recipients Casco and Perstorp. 10,000 tons chloroform. Recipient Paktank, which distributes the material throughout Sweden. 5,000 tons tolidine diozinium. Recipients Bofors and Berol.

Stenungsund. 23,000 tons butyraldehyde. 500 tons ethylene dicloride. 1,800 tons phenol.

Alvenas in Vanern, transport via the Trollhatte canal. 18,000 tons coal disulfide. Recipient is the Rayon Company in Karlstad.

Otterbacken (Vanern). 15,000 tons creosote. Recipients SJ and Televerket, which use the creosote for waterproofing.

Varberg. 3,800 tons creosote.

Helsingor. Undesignated amounts of fluorosilicone acid. Recipient is Boliden AB.

Landskrona. 94,000 tons ammonia. Recipients are Supraindustries.

Oskarshamn. 1,900 tons creosote.

Sodertalje. 3,000 tons phenol (2,200 tons in 1977).

Stockvik (Sundsvall Kema-Nord). Undesignated amounts of ethylene dicloride.

Ornskoldsvik. 22,000 tons butyraldehyde.

Holmsund. Undesignated amounts of creosote.

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END